Renée E. Rothauge, OSB #903712
MARKOWITZ HERBOLD PC
1211 SW Fifth Avenue, Suite 3000
Portland, Oregon 97204-3730
Telephone: (503) 295-3085
Fax: (503) 323-9105
reneerothauge@markowitzherbold.com

Michael J. Summersgill (*pro hac vice*)
Jordan L. Hirsch (*pro hac vice*)
WILMER CUTLER PICKERING HALE
AND DORR LLP
60 State Street
Boston, Massachusetts 02109
Telephone: (617) 526-6000
Fax: (617) 526-5000
michael.summersgill@wilmerhale.com
jordan.hirsch@wilmerhale.com

Todd C. Zubler (*pro hac vice*)
WILMER CUTLER PICKERING HALE
AND DORR LLP
1875 Pennsylvania Avenue, N.W.
Washington, D.C. 20006
Telephone: (202) 663-6000
Fax: (202) 663-6363
todd.zubler@wilmerhale.com

Arthur W. Coviello (*pro hac vice*)
WILMER CUTLER PICKERING HALE
AND DORR LLP
650 Page Mill Road
Palo Alto, CA 94304
Telephone: (650) 858-6069
Fax: (650) 858-6100
arthur.coviello@wilmerhale.com

Attorneys for Defendant and Counterclaim Plaintiff Intel Corporation

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF OREGON
PORTLAND DIVISION

FEREYDUN TABAIAN and AHMAD ASHRAFZADEH,

Plaintiffs,

v.

INTEL CORPORATION,

Defendant.

Case No.: 3:18-cv-326-HZ

INTEL CORPORATION'S REPLY MARKMAN BRIEF

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I. INTRODUCTION

In their attempt to stretch the claims of the '944 patent to cover the fundamentally different FIVR circuitry, Plaintiffs portray the '944 patent's claimed calibration control circuit as a circuit that uses generic outputs to perform general purpose calibration in a voltage regulator. But to do so, Plaintiffs present a tortured and confused reading of the patent, including that they:

- *Ignore critical portions of the claims.* For instance, with respect to the term "***droop*** outputs," the term itself suggests that it is an output used to adjust the ***droop*** function. Yet Plaintiffs ignore the "droop" in "droop outputs" and propose to construe it to include outputs that have nothing at all to do with droop. *See infra* p. 5.
- *Mischaracterize the claims.* For instance, with respect to the term "calibration control circuit," Plaintiffs purport to quote the claims to support their argument that the calibration control circuit's calibration need not relate to temperature. But in doing so, they ***use an ellipsis to delete the claim language specifically referring to the use of temperature to perform that calibration***. *See infra* pp. 14-15.
- *Mischaracterize the specification.* For instance, regarding the claims' required use of temperature data to adjust sense "***and***" droop outputs, Plaintiffs seek to support their attempt to rewrite the claimed "and" to "or" by arguing that most embodiments in the specification use temperature to adjust only droop. But in pointing to the specification for purported support, Plaintiffs ***leave out the two sentences immediately following the passage they quote*** which confirm that temperature is used to adjust both droop ***and*** sense outputs. *See infra* pp. 26-27.

Plaintiffs' infringement-driven claim constructions should be rejected. The claims should instead be construed—as Intel has proposed—consistent with the claim language, the clear

statements in the specification, and the unequivocal admissions of the non-plaintiff inventors.[1]

II. DISPUTED CLAIM TERMS

A. "droop outputs"

Claim Term	Intel's Proposed Construction	Plaintiffs' Proposed Construction
"droop output(s)" (claims 1-36)	"Outputs of the calibration control circuit used to adjust the droop function (*i.e.*, the function that automatically lowers the output voltage based on the output current)."	"Outputs of the calibration control circuit used to adjust voltage in circuitry, in a system that includes a droop function that can lower output voltage based on output current."

The parties' dispute regarding the term "droop outputs" reduces to whether the term should be construed as outputs that adjust ***the droop function*** (as Intel proposes), or whether the term should be construed to cover ***any outputs that make adjustments to voltage***, even adjustments that have nothing to do with "droop" or the "droop function" (as Plaintiffs propose).

1. *Plaintiffs Are Wrong That Droop Outputs Are Merely Any Outputs That Make Adjustments To Voltage In A Voltage Regulator*

As Intel explained in its opening brief, all voltage regulators adjust voltage. ECF 145 at 2-3, 12-13. A droop function is a particular way of adjusting voltage to avoid harmful voltage droops and spikes: the droop function lowers output voltage when current demand is high (and increases output voltage when current demand is low) to keep the voltage from fluctuating too high or too low when the processor's demand for current changes. *Id.* at 11-12, 11 n.4. As explained in Intel's opening brief, the claims and specification make clear that "droop outputs," as the term itself suggests, adjust the droop function (*i.e.*, the function that adjusts output voltage based on output current). *Id.* at 8-11. Plaintiffs' argument to the contrary—that droop outputs can be any outputs that merely adjust voltage, even if they make no adjustments to a droop

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[1] Plaintiffs inexplicably assert that Intel's expert "never discloses his own experience in … the 'basics of power regulation circuitry.'" ECF 143 at 5 n.1. Dr. Subramanian's declaration explains at length his years of experience with voltage regulators. *See, e.g.*, ECF 115-4 ¶ 9 ("I worked on the development of high performance voltage regulators for advanced microprocessor applications, and developed various classes of devices."); *see also id.* ¶¶ 6-8, 10-12.

function—mischaracterizes the ’944 patent.

First, none of the portions of the specification that Plaintiffs cite describes droop outputs as merely any outputs that adjust voltage. Plaintiffs first cite lines 5:61-63 (“The load voltage and the temperature may be monitored while ***the droop and sense settings may be adjusted*** until the load voltage meets the load’s specification.”).[2] ECF 143 at 5. This passage does not even reference droop outputs, let alone state that droop outputs merely adjust voltage. Instead, it explains that ***the droop settings—i.e., for the droop function—can be adjusted*** until the voltage meets the specifications of the load. As the patent makes clear elsewhere, and contrary to Plaintiffs’ argument, it is the droop outputs that are used to make these adjustments to the droop settings. ’944 patent, 7:23-25, 8:64-67.

Plaintiffs also cite lines 8:64-67 (“This ***adjustable droop amplifier 180 may be used to adjust the droop loss*** across the current sense circuit 140. The adjustment of the droop amplifier 180 may be used to drive an error circuit.”). ECF 143 at 6. But this again does not support Plaintiffs’ construction—it instead confirms that droop outputs are outputs that adjust the droop function. Specifically, the passage states that the droop amplifier implements the droop function—*i.e.*, it “adjusts the droop loss”—by driving the error circuit. This passage thus explains that it is the droop amplifier that implements the droop function. ’944 patent, 8:64-67. And since the patent is clear that the droop outputs adjust the droop amplifier (*id.*, 7:23-25), the passage cited by Plaintiffs shows that the droop outputs are used to adjust the droop function.

Plaintiffs then cite lines 9:50-52. ECF 143 at 6. Plaintiffs appear to have intended to cite lines 9:4-5 (which they quote), rather than lines 9:50-52. But in any event, neither passage states that droop outputs are merely any outputs that adjust voltage. Lines 9:50-52 simply states that

[2] Emphases added, unless otherwise noted.

the controller of the calibration control circuit interfaces with nonvolatile memory. And lines 9:4-5—which come only two sentences after the passage addressed just above describing how the droop amplifier implements the droop function ('944 patent, 8:64-67)—state only that adjusting the droop amplifier may be equivalent to adjusting the reference voltage. As Intel explained in its opening brief, the reference voltage is the level of voltage targeted by the regulator. ECF 145 at 3-4. The cited statement explains that, by adjusting the droop amplifier, the regulator effectively adjusts the level of voltage targeted by the regulator. For example, adjusting the droop amplifier that implements a droop function may cause the PWM to set the voltage higher (when current is lower) so that a subsequent drop in voltage (when the demand for current increases) does not cause the voltage to drop out of the specified range. ECF 115-4, Subramanian Decl. ¶ 66. As a result, adjusting the droop function effectively changes the level of voltage targeted by the regulator. But the converse is not true: changing the reference voltage does not adjust the droop function. Nothing in the cited passage suggests that droop outputs are merely any outputs that adjust voltage even if unrelated to a droop function.

Second, Plaintiffs incorrectly point to multiple portions of the specification that do not involve droop outputs at all. For example, Plaintiffs cite lines 1:36-51. ECF 143 at 6. This passage merely discusses the unremarkable fact that it was known that there are different ways to implement a droop function. '944 patent, 1:36-51 ("The droop function is used in a power supply to automatically lower the output voltage based on the output current …. There are many ways to set the droop based on the measured current."). The passage does not even mention "droop outputs," let alone suggest that droop outputs can be any outputs that adjust voltage. Similarly, Plaintiffs cite a portion of the Abstract that explains that the claimed invention "power[s] a processor or IC chip." ECF 143 at 5. This again does not say anything about droop

outputs, much less show that droop outputs can be any outputs that adjust voltage.

Third, and tellingly, in their effort to support their proposed construction, Plaintiffs ignore the portions of the specification that specifically explain what the droop outputs adjust. For example, Plaintiffs ignore the specification's statements that the droop outputs adjust the droop amplifier (which, as discussed above, adjusts the droop function). '944 patent, 7:23-25 ("The calibration control circuit may also adjust the droop amplifier ***via the droop output***."), 8:64-66 ("This adjustable droop amplifier 180 ***may be used to adjust the droop loss*** across the current sense circuit 140."). Plaintiffs also ignore the Figures, which show that the droop outputs (orange) go to the droop amplifier (pink) that implements the droop function. *See* ECF 145 at 10 (citing '944 patent, Fig. 1 (annotated), 9:24-40 (describing Fig. 2 as showing droop output 550 going to droop amplifier)).

Finally, Plaintiffs ignore the claim language. The term at issue is ***droop*** outputs, yet Plaintiffs never explain how the term could properly be construed to include outputs that have nothing at all to do with droop. As Intel explained in its opening brief, Plaintiffs' construction would read the "droop" out of the term "droop outputs." ECF 145 at 12-13; *see Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 951 (Fed. Cir. 2006) ("claim language should not [be] treated as meaningless").[3]

2. Plaintiffs' Criticisms Of Intel's Proposed Construction Are Wrong

Each of Plaintiffs' criticisms of Intel's proposed construction is similarly wrong. ***First***,

[3] Plaintiffs provide no explanation or citation for their assertion that droop outputs can merely be outputs "in a system that ***includes*** a droop function." ECF 143 at 5. The patent never states that droop outputs can be anything that adjusts voltage as long as they are in a system that happens to have a droop function. Instead, the patent specifically explains that the droop outputs adjust—not merely coexist with—the droop function. '944 patent, 7:23-25 ("The calibration control circuit may also adjust the droop amplifier via the droop output."), 8:64-66 ("This adjustable droop amplifier 180 may be used to adjust the droop loss across the current sense circuit 140.").

Intel's construction does not read out embodiments, as Plaintiffs incorrectly argue. ECF 143 at 7-8. The patent does not include any embodiments where the droop outputs merely make adjustments to the output voltage unrelated to a droop function. Plaintiffs confuse the issue by asserting that the droop function adjusts voltage and that, as a result, droop outputs can be any outputs that adjust voltage. But that is not what the patent says. The patent explains that the droop outputs adjust voltage in a specific way—*i.e.*, by adjusting the droop function. '944 patent, 7:23-25, 8:64-66. Each of Plaintiffs' assertions to the contrary fails:

Plaintiffs assert that, in one embodiment, the droop outputs may "adjust the reference voltage." ECF 143 at 7. But Plaintiffs do not include any citation to the '944 specification to support this assertion. And for good reason—the patent ***never*** states that the droop outputs are used merely to adjust the reference voltage. Plaintiffs also again cite lines 9:50-52 (and again apparently mean to cite lines 9:4-5) to point out that the patent states that adjusting the droop amplifier may be equivalent to adjusting the reference voltage. ECF 143 at 7. But as explained above, this does not disclose an embodiment in which the droop outputs make adjustments to voltage unrelated to a droop function. *Supra* pp. 3-4. Instead, it and the surrounding language explains only that, because adjusting the droop amplifier causes the PWM to set the voltage at a different level, adjusting the droop amplifier to implement a droop function effectively changes the level of voltage targeted by the regulator. '944 patent, 8:64-9:5.[4]

Plaintiffs also cite the embodiment described at lines 8:64-9:11 to suggest that droop

[4] Plaintiffs also argue that the droop function need not be adjusted at all because the provisional application says the droop function may be "set by the microprocessor manufacturers." ECF 143 at 8 (citing ECF 144-1 at 1). But this quote comes from the provisional application's "Background" section that describes the prior art. It does not describe the purportedly new invention, which the patent says allows droop settings to be adjusted after manufacturing. '944 patent, 5:18-21 ("This invention also provides accurate temperature-independent droop settings that can be programmed for specific and changing applications ***in the field***.").

outputs need not adjust the droop function. ECF 143 at 7. But this embodiment directly supports Intel's construction. As discussed above, the passage explains that the droop amplifier adjusts a droop function by driving the error circuit. '944 patent, 8:64-67 ("This adjustable droop amplifier 180 may be used to adjust the droop loss across the current sense circuit 140. The adjustment of the droop amplifier 180 may be used to drive an error circuit."). By adjusting the droop amplifier (*id.*, 7:23-25), the droop outputs therefore adjust the droop function.

Second, the fact that the claims do not include the phrase "droop function" (ECF 143 at 7) does not contradict Intel's construction. The question is how the '944 patent describes "droop outputs," and the patent is unequivocal that droop outputs adjust the droop function. '944 patent, 7:23-25, 8:64-67. Indeed, and contrary to their argument, even Plaintiffs admit that a droop function ***is*** required in the claims by including it in their own proposed claim construction. ECF 143 at 5 ("Outputs of the calibration control circuit used to adjust voltage in circuitry, in a system ***that includes a droop function*** that can lower output voltage based on output current."). But Plaintiffs nonsensically—and without any support in the patent—assert that the droop outputs must merely be "in a system" with a droop function, even if the outputs have no effect whatsoever on the droop function. *See id.*; *see also supra* p. 5 n.3.

Finally, Plaintiffs are wrong to dismiss the testimony of non-plaintiff inventor Ali Hejazi. ECF 143 at 8. Mr. Hejazi—who worked closely with the named Plaintiffs and holds himself out as at least a person of ordinary skill in the art—unequivocally confirmed what the specification says: the droop outputs are the outputs that adjust the droop function. ECF 146-2, Hejazi Dep., 78:16-19 ("[***Q.***] ***The droop output is the output that is used to adjust the droop function; is that right? A. Yes.***"). The Federal Circuit has repeatedly made clear that such admissions can be relevant to claim construction where, as here, they are consistent with the specification's use of a

term. *E.g.*, *Voice Techs. Grp., Inc. v. VMC Sys., Inc.*, 164 F.3d 605, 615 (Fed. Cir. 1999) (inventor's testimony considered "as 'enlarging [Federal Circuit's] understanding of the technology and the usage of the disputed terms'") (quoting *Hoechst Celanese Corp. v. BP Chems. Ltd.*, 78 F.3d 1575, 1580 (Fed. Cir. 1996)).[5]

In sum, the claim term is "***droop*** outputs," and the specification repeatedly explains that the droop outputs are outputs used to adjust the droop function. The term therefore should be construed as "outputs of the calibration control circuit used to adjust the droop function (*i.e.*, the function that automatically lowers the output voltage based on the output current)."

B. "sense outputs"

Claim Term	Intel's Proposed Construction	Plaintiffs' Proposed Construction
"sense output(s)" (claims 1-36)	"Outputs of the calibration control circuit used to adjust the circuitry that measures current."	"Outputs of the calibration control circuit used to adjust the current feedback loop."

The parties' dispute regarding the term "sense outputs" is whether the term should be construed to refer to outputs used to adjust ***the circuitry that measures (i.e., senses) current*** (as Intel proposes) or outputs used to adjust ***any unspecified circuitry within the current feedback loop*** (as Plaintiffs propose).

1. Plaintiffs Are Wrong That The '944 Patent Describes The Sense Outputs As Adjusting Any Circuitry In The Current Feedback Loop

Plaintiffs argue that sense outputs can be any outputs used to adjust any circuitry in the current feedback loop—even circuitry like the pulse width modulator (PWM) that is not involved

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[5] Plaintiffs' reliance on *Howmedica Osteonics Corp. v. Wright Med. Tech., Inc.*, 540 F.3d 1337 (Fed. Cir. 2008), is misplaced. In *Howmedica*, the defendant attempted to rely on testimony from a named inventor regarding his "intention" when adding a claim term during prosecution. *Id*. at 1346-47. The Federal Circuit explained that the "subjective intent" of an inventor cannot change the meaning of claim language. *Id.* Intel does not rely on Mr. Hejazi's "subjective intent" but rather cites his testimony—as one who is a person of ordinary skill in the art—to confirm the meaning of "droop outputs" as described in the specification.

in sensing, *i.e.*, measuring, current. This is directly contrary to the ’944 patent. As Intel explained, and as the name suggests, “***sense*** outputs” are the outputs used to make adjustments to the portions of the current feedback loop involved in ***sensing*** current: the ***sense*** amplifier and the current ***sense*** circuit. *See* ECF 145 at 14-17. Plaintiffs’ arguments to the contrary are wrong.

First, Plaintiffs note that the specification states that “[o]nly a portion” of the current feedback loop measures—or ***senses***—current. ECF 143 at 10. But that supports Intel’s, not Plaintiffs’, construction. The specification explains that the portion of the current feedback loop involved in the measurement of current is the ***current sense circuit*** and the ***sense amplifier***. Specifically, the specification states that the current sense circuit measures current and the sense amplifier controls variances in the current sense circuit to ensure accurate measurements of current. ’944 patent, 7:13-14 (“The current sense circuit measures the current ….”), 8:53-54 (“The adjustable sense amplifier 150 controls the variances in the current sensing circuit.”). Thus, when the ’944 patent states that the sense outputs adjust the sense amplifier (*id.*, 7:21-25), it makes clear that the sense outputs are used to adjust the current sensing circuitry—not some other portion of the current feedback loop that has no involvement in sensing current.

Second, Plaintiffs cite lines 8:54-58 and 8:59-62 to suggest that, in some embodiments, sense outputs are used to adjust the current feedback loop generally and not the sense circuitry specifically. ECF 143 at 10. But neither passage supports that assertion. In fact, the first passage actually supports Intel’s construction because it expressly refers to adjusting the *sense* circuitry (*i.e.*, “*sense* amplifier”). ’944 patent, 8:54-58 (“By ***adjusting the feedback gain of the adjustable sense amplifier*** 150, variations in the current sense circuit of each phase can be balanced to equalize the load seen by each phase of a multi-phase regulator.”). The second passage refers to the unremarkable fact that—as explained in Intel’s opening brief (ECF 145 at

15)—the output of the sense amplifier is input to the PWM that is used to modify the regulator's output. '944 patent, 8:59-62 ("The output of the adjustable sense amplifier 150 drives the current sense input of the pulse width modulator (PWM) 160 to generate the proper pulse width signal to the power output FET 130 to regulate the output power."). Neither passage suggests that sense outputs are merely used to adjust the current feedback loop generally.

Third, Plaintiffs' suggestion that "in other implementations" the sense outputs ***could be*** used to adjust the PWM—rather than the sense circuitry (ECF 143 at 11)—is a good example of how far Plaintiffs must stretch to try to support their construction. The patent ***never*** states that the sense outputs are used to adjust the PWM, and Figure 1 shows the sense outputs going only to the sense amplifier 150, not the PWM 160. Indeed, Plaintiffs do not cite to the '944 patent in support of their assertion. They instead cite to one sentence from the provisional application related to the '944 patent.[6] *Id.* (citing ECF 144-1 at 2). But this sentence states only that the disclosed sensing circuit compensates for inaccuracies of the ***sensing*** elements. ECF 144-1 at 2 ("The sensing circuit disclosed is digitally calibrated to compensate for the inaccuracies of the sensing elements."). It does not mention the sense outputs, it does not mention the PWM, and it does not suggest in any way that the sense outputs are used to adjust the PWM.

Fourth, Plaintiffs again tellingly ignore the portions of the specification that make clear that ***sense*** outputs—as their name suggests—adjust circuitry that ***senses*** current. Plaintiffs, for instance, ignore the specification's express statements that the *sense* outputs adjust the *sense* amplifier that controls variances in the current *sensing* circuit—making clear that the sense

[6] A provisional application is an application that can be used to establish an earlier filing date for an issued patent if it discloses the subject matter of the claims in the issued patent. A provisional application includes a specification but does not require any claims and does not become an issued patent. Plaintiffs have not provided any evidence that the provisional application sufficiently discloses the subject matter of the '944 patent's claims.

outputs are outputs used to adjust the circuitry used to measure current. ’944 patent, 7:21-25 (calibration control circuit “adjust[s] the sense amplifiers in each phase via the sense outputs”), 8:53-54 (“The adjustable sense amplifier 150 controls the variances in the current sensing circuit.”). Plaintiffs also ignore the ’944 patent’s Figures, which similarly show the sense outputs going to the sense amplifier (which controls the variances in the current sense circuit). ’944 patent, Figs. 1 & 2; ECF 115-4 ¶¶ 87-88.

Finally, Plaintiffs again ignore the claim language. The term at issue is ***sense*** outputs, yet Plaintiffs never explain why the term should be construed to include outputs that have nothing at all to do with the sense circuitry. As Intel explained in its opening brief, Plaintiffs’ proposed construction would read the word “sense” out of the term “sense outputs.” ECF 145 at 17; *see Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1115 (Fed. Cir. 2002) (rejecting “construction [that] would render … term meaningless”).

2. Plaintiffs’ Criticisms Of Intel’s Proposed Construction Are Wrong

Each of Plaintiffs’ criticisms of Intel’s construction is wrong. ***First***, Plaintiffs are wrong that Intel’s construction reads out preferred embodiments. ECF 143 at 11. Plaintiffs note that in the preferred embodiment, sense outputs go to the sense amplifier, and not the current sense circuit. *Id*. Plaintiffs argue that Intel’s construction requires the sense outputs to adjust the current sense circuit and thus would not cover this embodiment. *Id.* But Plaintiffs’ argument is directly contrary to the specification. Plaintiffs ignore that the specification expressly states that ***the sense amplifier controls variances in the current sense circuit***. ’944 patent, 8:53-54 (“The adjustable sense amplifier 150 controls the variances in the current sensing circuit.”). By adjusting the sense amplifier (that in turn controls variances in the current sense circuit), the sense outputs thus adjust the current sensing circuitry (the sense amplifier ***and*** the current sense circuit). Intel’s construction is thus entirely consistent with the preferred embodiment.

Second, Plaintiffs attempt to make a claim differentiation argument using originally filed claim 26. ECF 143 at 11. Plaintiffs appear to assert that, because claim 26 recites both a current sense circuit and an adjustable sense amplifier, the term "sense outputs" in claim 1 is not limited to outputs used to adjust these two sense circuits. This is wrong. The doctrine of claim differentiation presumes that a dependent claim has a different scope than the independent claim from which it depends. The doctrine therefore precludes claim constructions that would result in a dependent claim having the same scope as the independent claim. *See Sunrace Roots Enter. Co. v. SRAM Corp.*, 336 F.3d 1298, 1302-03 (Fed. Cir. 2003) (claim differentiation applies "when the limitation in dispute is the only meaningful difference between an independent and dependent claim, and one party is urging that the limitation in the dependent claim should be read into the independent claim"). Claim differentiation often applies where a dependent claim adds a limitation to a particular term also used in an independent claim, thus indicating that the term as used in the independent claim is not so limited (if, for instance, a dependent claim added the limitation that sense outputs adjust the sense amplifier and current sense circuit, this would suggest that sense outputs as used alone in the independent claim is not so limited). *See Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004) (rejecting construction to add limitation to claim term where "a comparison of the independent and dependent claims shows that the dependent claims differ from the independent claims ***only*** with regard to the presence of [of the added limitation] in the dependent claims").

That is not the case here. Claim 26 (which depends from claim 1) does not even refer to sense outputs or add any limitations regarding what sense outputs are or how they are used. Instead, the claim adds a host of limitations unrelated to the sense outputs (*e.g.*, a multiphase clock register, set register, etc.) and requires that the current sense circuit measure the current

and feed it back to the regulator via the sense amplifier. ECF 144-2, clam 26 ("said current sense circuit measures the current of said output FETs and feeds back to said set register via said adjustable sense amplifier and said pulse width modulator"). None of the further limitations added by claim 26 suggests that sense outputs as used in claim 1 are merely any outputs used to adjust voltage. *See Trading Techs. Int'l, Inc. v. eSpeed, Inc.*, 595 F.3d 1340, 1355 (Fed. Cir. 2010) (rejecting argument that claim differentiation required broader construction where there were other limitations in dependent claim and therefore no redundancy); *Kraft Foods, Inc. v. International Trading Co.*, 203 F.3d 1362, 1368 (Fed. Cir. 2000) ("[T]hat the claims are presumed to differ in scope does not mean that every limitation must be distinguished from its counterpart in another claim, but only that at least one limitation must differ.").

The claim term is "***sense***" outputs, and the specification states that the sense outputs are used to adjust the current ***sensing*** circuitry. The term should be construed as Intel proposes: "outputs of the calibration control circuit used to adjust the circuitry that measures current."

C. "calibration control circuit"

Claim Term	Intel's Proposed Construction	Plaintiffs' Proposed Construction
"calibration control circuit" (claims 1-36)	"Circuit that calibrates current sensing circuitry and a droop function over a range of temperatures."	Plain meaning. Alternatively: "Circuitry configured to set or adjust calibration data for use in the control of a regulator circuit."

The parties' dispute regarding "calibration control circuit" reduces to whether the term should be construed as a circuit that calibrates ***current sense circuitry and droop over a range of temperatures*** (as Intel contends), or whether it should be construed to cover any circuit that performs ***any type of unspecified calibration***—even calibration that has nothing to do with sense outputs, droop outputs, or temperature (as Plaintiffs contends).

1. The Term Should Be Construed

Plaintiffs' argument that "calibration control circuit" does not require construction (ECF 143 at 15-16) is wrong as a matter of law. Plaintiffs assert that "calibration control circuit"

should have its “plain meaning” but then seek to apply the term in a way that is inconsistent with its use in the ’944 patent. As explained in Intel’s opening brief, the patent describes the calibration control circuit as a specific type of circuit that purportedly overcomes specific problems in the prior art by calibrating sense circuitry and droop over a range of temperatures. ECF 145 at 17-19; ’944 patent, Abstract (the calibration controller “***senses and regulates both a current sensing circuit and the droop in a power regulator over a range of temperatures*** thus equalizing phase outputs”). Plaintiffs, however, contend that the calibration control circuit can be a circuit that performs any type of calibration—even if the circuit does not calibrate for changes in temperature. In *O2 Micro International v. Beyond Innovation Technology*, the Federal Circuit held that where there is a dispute over the scope of a term, the term must be construed. 521 F.3d 1351, 1362 (Fed. Cir. 2008) (courts have “duty to resolve” disputes over the scope of claim terms). There is a dispute here, and therefore the term should be construed.

2. Plaintiffs Are Wrong That The Calibration Control Circuit Can Be Any Circuit That Performs Any Type Of Calibration

The ’944 patent never describes the calibration control circuit as a circuit that merely performs any type of unspecified calibration. Plaintiffs’ contrary arguments are wrong.

First, Plaintiffs are wrong that the claims support their proposed construction. ECF 143 at 16-17. Plaintiffs argue that the claim language indicates that the calibration control circuit can be any circuit that adjusts any calibration data to control a voltage regulator. *Id.* ***But Plaintiffs mischaracterize the claims by cutting the portion of the claim language that contradicts their argument***. Plaintiffs quote the following claim language as purportedly supporting their argument that the calibration control circuit need not perform calibration relating to temperature:

> said calibration control circuit interfaces … to calibrate said calibration data stored in said nonvolatile memory.

Id. at 16. But the portion that Plaintiffs omitted with an ellipsis (shown in bold italics below)

makes clear that the calibration control circuit in fact uses temperature to perform its calibration:

> said calibration control circuit interfaces ***with said temperature input and said load voltage input*** to calibrate said calibration data stored in said nonvolatile memory.

’944 patent, claim 1 (10:18-20). The calibration control circuit thus interfaces with the temperature input to perform the required calibration.

Plaintiffs similarly ignore the claims’ multiple additional references to the use of temperature to perform calibration. *Id.*, claim 1 (10:13-14) (“said calibration control circuit interfaces with said temperature input to receive temperature data”), (10:15-17) (“said temperature data is used by said calibration control circuit to adjust said sense outputs and said droop outputs”). Contrary to Plaintiffs’ argument, therefore, the claims make clear that the calibration control circuit’s calibration relates to temperature.

Second, Plaintiffs are wrong that the specification supports their construction. Plaintiffs first cite portions of the specification stating that the calibration control circuit calibrates the calibration data in nonvolatile memory as purportedly supporting their argument that such calibration need not relate to temperature. ECF 143 at 16 (citing ’944 patent, 2:34-36, 6:19-23). But, again, the claims make clear that the calibration control circuit performs this calibration ***by calibrating for temperature***. ’944 patent, claim 1 (10:18-20) (“said calibration control circuit ***interfaces with said temperature input*** and said load voltage input ***to calibrate*** said calibration data stored in said nonvolatile memory”).

Plaintiffs then cite lines 9:23-30, where the specification states that the calibration control circuit controls the adjustments to the droop and sense amplifiers via the droop and sense outputs. ECF 143 at 16-17. But once again, the claims explain that the calibration control circuit does this ***using temperature data***. ’944 patent, claim 1 (10:15-17) (“said ***temperature data is used by said calibration control circuit*** to adjust said sense outputs and said droop outputs”).

The specification similarly explains that the calibration control circuit adjusts the sense and droop outputs in order to calibrate the droop function and current sense circuitry for changes in temperature. *Id.*, Abstract ("The circuits may include a calibration controller that ***senses and regulates both a current sensing circuit and the droop*** in a power regulator ***over a range of temperatures*** thus equalizing phase outputs."), 5:32-35 ("***By calibrating the droop and sense settings over various temperatures*** for a specific load[,] the power supply compensates for inaccuracies in the circuit.").

Third, Plaintiffs rely on one line of the provisional application for the '944 patent stating that "the circuit … readjust[s] itself for accuracy." ECF 143 at 17. As an initial matter, this statement does not support Plaintiffs' construction—it does not say anything about how a calibration control circuit readjusts itself or what it is adjusting for. Moreover, Plaintiffs omit the portions of the provisional application—including in the "Summary of the Invention" section—stating that the disclosed circuit calibrates by using temperature. ECF 144-1 at 2 (the claimed invention forces "output voltage at the second temperature … to match the voltage at the first temperature"), 3 ("Figure 14 illustrates the current invention using the temperature sensor, droop amplifier and calibration circuit, in accordance with the instant invention.").

Fourth, Plaintiffs once again simply ignore the many portions of the patent that contradict their construction. For example, Plaintiffs wholly ignore the specification's statement that the purported problem with prior art voltage regulators was that they could not sufficiently account for changes in temperature ('944 patent, 1:66-2:2) and that the calibration control circuit purportedly solves this problem by regulating the current sensing circuit and droop function "***over a range of temperatures***" (*id.*, Abstract). Plaintiffs also ignore the Figures which show that the calibration control circuit receives temperature data and then provides outputs in order to

perform its calibration. ECF 145 at 9-10; '944 patent, Fig. 1 (annotated).

3. *Plaintiffs' Criticisms Of Intel's Construction Are Wrong*

Plaintiffs' criticisms of Intel's construction are wrong. ***First***, relying on their disagreement with Intel's constructions of "sense outputs" and "droop outputs," Plaintiffs argue that requiring the calibration control circuit to calibrate current sensing circuitry and a droop function would read out embodiments. ECF 143 at 17-18. This argument fails for the reasons discussed above: the patent specifically describes the sense outputs as the outputs that adjust the sense circuitry and the droop outputs as the outputs that adjust the droop function. *See supra* pp. 2-13.

Second, Plaintiffs argue that the calibration control circuit does not have to adjust both the droop outputs (to calibrate the droop function) ***and*** the sense outputs (to calibrate the current sensing circuitry). ECF 143 at 17-18. But this is precisely what the claims require: "said temperature data is used by said calibration control circuit to adjust said sense outputs ***and*** said droop outputs." '944 patent, claim 1 (10:15-17).

The term "calibration control circuit" should be construed as Intel proposes—a "circuit that calibrates current sensing circuitry and a droop function over a range of temperatures."

D. "load voltage input"

Claim Term	Intel's Proposed Construction	Plaintiffs' Proposed Construction
"load voltage input" (claims 1-36)	"Input to the calibration control circuit that provides the voltage supplied to the load."	Plain meaning. Alternatively: "Input to the calibration control circuit that provides load voltage data."

The parties dispute whether the load voltage input provides ***the load voltage*** (*i.e.*, "the voltage supplied to the load") (as Intel proposes), or whether it merely provides "load voltage ***data***" that in some unspecified way relates to the load voltage (as Plaintiffs propose).[7]

[7] Plaintiffs assert that "load voltage input" should be construed to have its "plain meaning" but then seek to apply it in a way that is inconsistent with its use in the patent. Given the parties' dispute over the meaning of the term, it should be construed. *O2 Micro*, 521 F.3d at 1362.

1. Plaintiffs' Proposed Construction Is Wrong

As Intel explained in its opening brief, Plaintiffs' construction should be rejected because it would permit the load voltage input to merely provide "load voltage ***data***"—an ambiguous term that is not used anywhere in the patent and that could incorrectly be read to encompass data that does not represent the actual load voltage (*i.e.*, the voltage supplied to the load). ECF 145 at 23-24; '944 patent, 7:25-27. Plaintiffs now appear to agree that the load voltage input must at least provide data that ***represents the load voltage***, not merely data with some unspecified connection to the load voltage: Plaintiffs acknowledge that the patent describes the calibration control circuit as receiving data representing "the load voltage." ECF 143 at 18, 19. Plaintiffs' construction, with its reference to unspecified "load voltage data" that could arguably include any data related to the load, should therefore be rejected.

2. Plaintiffs' One Argument Regarding Intel's Construction Is Wrong

Plaintiffs' only argument with respect to Intel's construction is that it allegedly excludes a preferred embodiment by requiring the load voltage input to provide "the actual ***analog*** voltage supplied to the load." ECF 143 at 19. Plaintiffs argue that the specification shows that the calibration control circuit may instead receive the load voltage in ***digital*** form—*i.e.*, it might "receive[] ***data*** representing the load" via an analog-to-digital converter shown in Figure 2. *Id.*

Plaintiffs mischaracterize Intel's proposed construction. Intel's proposed construction does not require the load voltage input to provide the voltage in ***analog*** form as Plaintiffs contend. *Id.* Instead, it requires only that the load voltage input provide "the voltage supplied to the load"—whether in analog or digital form. Consistent with the claims and specification, it requires that the calibration control circuit includes an input that lets the calibration control circuit know what voltage is being supplied to the load so that it can then make any necessary adjustments. *See* ECF 145 at 23-24; '944 patent, 3:43-45, 7:25-27 ("[T]he calibration control circuit may monitor

the load voltage output of the current sense circuit ***via the load voltage input***."); ECF 146-5, Subramanian Supp. Decl. ¶ 23.

It is instead ***Plaintiffs' construction*** that excludes a preferred embodiment because it ***does*** specify a form: by specifying that it provides "load voltage ***data***," plaintiffs appear to require that it be supplied in digital form. *See* Ex. 10, Merriam Webster at 2 (defining "data" to mean "information in ***digital form*** that can be transmitted or processed"). Plaintiffs, however, concede that the calibration control circuit may also receive the load voltage directly in ***analog*** form. ECF 143 at 18 ("The calibration control circuit may receive this load voltage directly."); *see, e.g.*, '944 patent, Fig. 1 (showing a voltage from the load 165 coupled directly to the calibration control circuit 190). But Plaintiffs' proposed construction requiring "load voltage ***data***"—*i.e.*, digital form—would exclude this embodiment.[8]

The term "load voltage input" should be construed as Intel proposes: "input to the calibration control circuit that provides the voltage supplied to the load."

E. "calibration data"

Claim Term	Intel's Proposed Construction	Plaintiffs' Proposed Construction
"calibration data" (claims 1-36)	"Data that relates the sense outputs and droop outputs with temperature and is used to adjust those outputs as the temperature varies."	"Data used in determining droop output and sense output settings, based in part on operating a circuit under known conditions."

[8] Plaintiffs also mischaracterize Figure 2 and claim 13. ECF 143 at 18-19. In Figure 2, Plaintiffs point to the analog-to-digital converter 670, which receives the analog load voltage, converts it to digital form, and provides it to the calibration circuit controller 500. Plaintiffs argue that this shows that the calibration control circuit receives digital data representing the load voltage. But Plaintiffs ignore that the calibration control circuit is not limited to calibration controller 500 but instead ***includes*** both the controller ***and*** the analog-to-digital convertor 670. The specification describes all the circuitry of Figure 2 as the calibration control circuit. '944 patent, 9:23-25 ("The calibration control circuit 190 in FIG. 1 is shown in more detail in FIG. 2."), 9:28-29 ("The main component of the calibration control circuit is the controller 500."). The calibration control circuit thus receives an analog voltage ***at the analog-to-digital converter*** because that converter is part of the calibration control circuit. For similar reasons, Intel's construction is consistent with claim 13. Claim 13 says the converter is part of the load voltage input, which claim 1 says is part of the calibration control circuit. In any event, as explained above, Intel's construction does not require the load voltage input to provide an analog voltage.

The parties' dispute regarding this term is whether calibration data should be construed as data that relates the sense and droop outputs ***with temperature*** (as Intel contends), or whether it should be construed to cover ***any data*** used for any type of calibration (as Plaintiffs contend).

1. Plaintiffs Are Wrong That Calibration Data Is Any Data That Can Be Used For Any Type of Calibration

The '944 patent never describes calibration data as merely data used for any type of calibration—including calibration that is unrelated to temperature—as Plaintiffs contend. Each of Plaintiffs' arguments in support of their construction is wrong.

First, the portions of the specification Plaintiffs cite do not support their construction. Plaintiffs first cite lines 5:54-6:9 to suggest that calibration data is data used for any type of calibration. ECF 143 at 12. This passage does not support Plaintiffs. As an initial matter, it does not mention calibration data. Moreover, contrary to Plaintiffs' arguments, the passage indicates that the calibration of the claimed invention is calibration for changes in temperature. '944 patent, 5:54-6:9 ("The load voltage ***and the temperature may be monitored while the droop and sense settings may be adjusted*** until the load voltage meets the loads specification."). That is consistent with the claims, which require the calibration control circuit to adjust the droop and sense outputs based on temperature. *Id.*, claim 1 (10:15-17) ("said temperature data is used by said calibration control circuit to adjust said sense outputs and said droop outputs").

Plaintiffs next selectively quote the passage at lines 7:36-59, but this passage, read in its entirety, again contradicts Plaintiffs' argument that calibration data is data used for any calibration. ECF 143 at 12. Plaintiffs quote the portion that states that "[t]hese methods may begin with estimating the anticipated operation specifications of circuit's load" and "the regulator and the calibration control circuit may be placed in a circuit with a load" to argue that calibration data may be just generic data relating to anticipated operation of the regulator. *Id.*

(quoting ’944 patent, 7:38-43). But Plaintiffs leave out the portion immediately following their quotation that makes clear that “the methods of the present invention” use calibration data that ***relates the temperature*** with the sense and droop outputs:

> The ***methods of the present invention*** may then sample the load voltage input at the interface between the regulator and the load ***and sample the temperature input*** of the calibration control circuit. The sense outputs and the droop outputs then may be adjusted until the input load voltage meets load operation specifications. The controller then may create ***data that relates the temperature with the sense outputs and temperature with the droop output*** and store the data in nonvolatile memory.

’944 patent, 7:43-51.

Second, Plaintiffs are wrong that the specification describes embodiments in which temperature data is not used in generating calibration data (ECF 143 at 13). Plaintiffs first cite a portion of the provisional application to the ’944 patent stating that the “calibration circuit” can adjust the sensing circuit. *Id.* (citing ECF 144-1 at 4 (“By using a known load and a known reference, the inductor current can be predicted. The calibration circuit can then use this information and the sensed current to adjust the gain of the sensing circuit to match the measured current of the calculated results.”)). This passage does not mention “calibration data” at all, much less state that calibration data can be any data relating to any type of calibration. Instead, when read in light of the specification, the patent makes clear that “calibration data” relates to ***temperature***. ’944 patent, 5:32-36; *see Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc) (“the specification is always highly relevant to the claim construction analysis,” “[u]sually, it is dispositive; it is the ***single best guide to the meaning of a disputed term***” (internal citations and quotation marks omitted)).

Plaintiffs then cite lines 5:25-30 (“[A]t power up, the current sensing mechanism is adjusted by the calibration parameters such that the overall gain of the sensing mechanism in all phases may be matched, and the total current across all phases is shared equally regardless of the

temperature or the load.”). This passage similarly does not state that calibration data can be any data used for any type of calibration. Instead, it states that, at power up, the current sensing mechanism is calibrated and that such calibration accounts for changes in temperature (“***regardless of the temperature***”). Indeed, Plaintiffs ignore that ***just two lines after the portion they quote***, the specification explicitly states that the calibration data of “the invention” is used to “calibrat[e] the droop and sense settings ***over various temperatures***.” *Id.*, 5:31-36 (“This invention provides near equivalent power to a load across all phases of a multiphase power supply. By ***calibrating the droop and sense settings over various temperatures*** for a specific load[,] the power supply compensates for inaccuracies in the circuit. ***This calibration data*** may be storied [*sic*] in nonvolatile memory.”).

Plaintiffs then argue that lines 2:40-43 indicate that calibration data can be data related to any calibration. ECF 143 at 13 (citing ’944 patent, 2:40-43 (“The data stored in the nonvolatile memory for the droop outputs and sense outputs may be based on the load voltage input and the temperature input.”)). This is again wrong. Plaintiffs argue that because this passage states that data stored in nonvolatile memory “***may***” be based on the load voltage input and the temperature input, calibration data need not be related to temperature. But the passage does not state that calibration data can be any data related to any type of calibration. Instead, it states that the invention “may” involve a specific use of temperature data—*i.e.*, the use of temperature data in conjunction with the load voltage input—but the embodiment plainly uses temperature data. It does not describe calibration data that is unrelated to temperature.

Third, Plaintiffs yet again ignore the parts of the ’944 patent that specifically explain the meaning of the term at issue. The patent states that prior art voltage regulators were purportedly flawed because the current measuring circuitry and droop function were inaccurate as

temperature changed (’944 patent, 1:66-2:4) and asserts that, to solve this problem, the claimed invention uses “data that relates the temperature with the sense outputs and temperature with the droop output” (*id.*, 3:64-67). The patent then expressly refers to this data—*i.e.*, the data that relates temperature with the sense and droop outputs—as “***calibration data***”:

> By calibrating the droop and sense settings over various temperatures for a specific load[,] the power supply compensates for inaccuracies in the circuit. ***This calibration data*** may be storied [*sic*] in nonvolatile memory.

Id., 5:32-36. Plaintiffs wholly ignore this statement.

2. Plaintiffs’ Criticisms Of Intel’s Construction Are Wrong

Each of Plaintiffs’ criticisms of Intel’s proposed construction is wrong. ***First***, Plaintiffs are wrong that Intel’s construction imports limitations from the specification. ECF 143 at 13-15. Instead, Intel is relying on express statements in the specification explaining what calibration data is—specifically, that it is data that relates sense and droop outputs with temperature and that is used to adjust those outputs as the temperature varies. ’944 patent, 5:32-36, 4:31-33. That is precisely how the Federal Circuit has held claim terms should be construed. *Phillips*, 415 F.3d at 1315 (specification “is the ***single best guide to the meaning of a disputed term***” (internal citations and quotation marks omitted)). Tellingly, Plaintiffs ignore these statements both in arguing for their construction and in criticizing Intel’s.

Second, Plaintiffs’ claim differentiation argument (ECF 143 at 14) fails as a matter of law. Plaintiffs assert that because ***originally filed claims 47, 49, and 64*** (claims that never issued) referred to data that relates temperature input with sense and droop outputs, the term “calibration data” ***in the issued claims*** must not require temperature. *Id*. This is wrong. As an initial matter, the originally filed claims never issued and cannot form the basis for claim differentiation. Claim differentiation only applies to a comparison between ***issued*** claims. S*ee Carnegie Mellon Univ. v. Hoffman-La Roche Inc.*, 1997 WL 33152823, at *7 (N.D. Cal. Mar. 31, 1997) (“[T]he

plaintiffs provide no support for the contention that courts must differentiate between filed as opposed to issued claims. The doctrine of claim differentiation assumes that the PTO would not ***issue*** several claims of the same scope."); *id.* ("The only inconsistency that would arise is if the Court were to apply rigidly the doctrine of claim differentiation to the patentees' filed as opposed to issued claims. ***The Court declines to do so***."); *Rambus, Inc. v. Infineon Techs., AG*, 2001 WL 34138091, at *15 n.22 (E.D. Va. 2001) (no claim differentiation based on unissued claims).

In any event, even if these original claims had issued, claim differentiation still would not apply. As explained above (*supra* p. 12-13), claim differentiation precludes claim constructions that would result in a dependent claim having the same scope as the independent claim. *See, e.g.*, *Trading Techs.*, 595 F.3d at 1355. That is not the case here. Each of originally filed claims 47, 49, and 64 includes limitations that have nothing to do with calibration data being related to temperature. Claims 47 and 49, for example, require estimating anticipated operation specifications of the load. ECF 144-2, claim 47 ("estimating anticipated operation specifications of said load"), claim 49 (dependent claim requiring "the method of claim 47"). Claim 64 requires setting sense and droop output "values" and performing the steps of setting sense and droop output values and referencing memory "in any appropriate order." *Id.*, claim 64. Intel's construction therefore would not result in these claims having the same scope as claim 1, and Plaintiffs' claim differentiation argument fails. *See supra* p. 13 (collecting cases).[9]

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[9] Plaintiffs' claim differentiation argument based on claim 9 (ECF 143 at 14) fails for the same reason. Claim 9 does not add a requirement that calibration data is related to temperature. Instead, it states that nonvolatile memory stores data for the droop and sense outputs that is based on the temperature input ***and*** the load voltage input. '944 patent, claim 9 (10:41-44) ("The circuit of claim 1 where said nonvolatile memory stores data for said droop outputs and said sense outputs where said data is based on said load voltage input and said temperature input."). Intel's construction—requiring calibration data to be related to temperature—therefore creates no duplication between claims 1 and 9, and Plaintiffs' claim differentiation argument fails.

Third, Plaintiffs are wrong that Intel's construction reads out embodiments. ECF 143 at 14-15. This argument fails for the same reasons discussed above: Plaintiffs never identify, and the specification never describes, an embodiment in which calibration data is unrelated to temperature. Plaintiffs argue that lines 2:40-43 and 4:29-31 state that calibration data "may be" related to temperature, suggesting that using temperature is "optional." *Id.* at 15. Plaintiffs are wrong. As explained above, the passage at lines 2:40-43 states that data that is related to temperature and also related to the load voltage input may be stored in nonvolatile memory. '944 patent, 2:40-43. Similarly, the passage at lines 4:29-31 does not say that calibration data merely "may be" related to temperature. It instead explains that when the controller of the calibration control circuit receives a specific temperature input, it can check memory to see if there is already calibration data associated ***with that specific temperature***. '944 patent, 4:29-33 ("The controller then. [*sic*] references the memory for stored calibration data that may be associated with the sampled temperature. Finally the controller sets the sense output and the droop output of the calibration control circuit according to the calibrated data."). This is entirely consistent with the patent's other statements that the calibration data is related to temperature.

Finally, Plaintiffs argue that the requirement in the final limitation of claim 1 to calibrate the calibration data using temperature would be superfluous if the calibration data already related the sense and droop outputs to temperature. ECF 143 at 15. This is wrong. The patent explains that calibration data relates temperature data to sense and droop outputs and that this data is then further calibrated as temperature changes. '944 patent, 5:32-36 ("By calibrating the droop and sense settings over various temperatures for a specific load[,] the power supply compensates for inaccuracies in the circuit. This calibration data may be storied [*sic*] in nonvolatile memory."), 5:23-25 ("This calibration data is preferably stored in nonvolatile memory, where it can be

reused, modified, and restored throughout the life of the power supply."). Claim 1 thus requires storing the calibration data and then further calibrating the calibration data as the temperature changes. *Id.*, claim 1 (10:7) ("said nonvolatile memory stores calibration data"); *id.*, claim 1 (10:18-20) ("said calibration control circuit interfaces with said temperature input and said load voltage input to calibrate said calibration data stored in said nonvolatile memory.").

As confirmed by the testimony of one of the non-plaintiff inventors, the patent uses the term "calibration data" to refer to data that relates the sense and droop outputs to temperature. "Calibration data" should therefore be construed as Intel proposes.

F. "temperature data is used by said calibration control circuit to adjust said sense outputs and said droop outputs"

Claim Term	Intel's Proposed Construction	Plaintiffs' Proposed Construction
"temperature data is used by said calibration control circuit to adjust said sense outputs and said droop outputs" (claims 1-36)	Plain meaning, *i.e.*, "the calibration control circuit uses the temperature data to adjust both the sense outputs and the droop outputs."	"Temperature data is a factor in the determination of one or more sense output and droop output settings."

The parties' dispute regarding this term reduces to whether it requires the calibration control circuit to use temperature data to adjust both sense outputs ***and*** droop outputs (as Intel proposes), or whether temperature data need only be used in the determination of "one or more" of the sense and droop output settings (as Plaintiffs propose).

1. *Plaintiffs Are Wrong That The Term Only Requires The Use of Temperature Data To Adjust One Of The Sense And Droop Outputs*

As Intel explained in its opening brief, Plaintiffs' proposed construction—which would require the calibration control circuit merely to adjust "one or more" of the sense outputs and droop outputs—is at war with the plain language of this claim term. ECF 145 at 24-26. Plaintiffs' arguments cannot overcome this fundamental deficiency.

First, and tellingly, Plaintiffs completely ignore the claim language. ECF 143 at 20-22. The claim states that the calibration control circuit uses temperature data "to adjust said sense

outputs ***and*** said droop outputs." '944 patent, claim 1 (10:15-17). Plaintiffs never provide any explanation for how the claim's clear "***and***" language could reasonably be read to require that the calibration control circuit use temperature data to adjust only the sense ***or*** droop outputs.

Second, Plaintiffs are wrong that the specification supports their attempt to rewrite the claims. Plaintiffs argue that "most embodiments" of the specification involve adjusting only the droop outputs based on temperature, while the sense outputs are used only "to balance phase currents"—not for temperature correction. ECF 143 at 20. That is flatly wrong and even Plaintiffs' own citations show why. For example, Plaintiffs assert that lines 5:16-21 "differentiat[e]" between "providing for 'temperature-independent droop settings'" (which Plaintiffs admit does depend on temperature) and current phase balancing (which Plaintiffs say does not depend on temperature). ECF 143 at 20 (citing '944 patent, 5:16-21). But ***Plaintiffs omit the very next sentences***, which show that temperature ***is*** used for this current phase balancing. *See* '944 patent, 5:21-30 ("The disclosed circuit is digitally calibrated to compensate for the inaccuracies of the current sensing elements," which allows "total current across all phases [to be] shared equally ***regardless of the temperature*** …."). These sentences omitted by Plaintiffs describe how current sensing elements are adjusted for "inaccuracies," and the corrections are specifically for ***temperature***-based inaccuracies, so that after the correction, current will be balanced equally among phases regardless of temperature. Thus, even this embodiment cited by Plaintiffs describes ***both*** the droop circuitry ***and*** the current measuring circuitry being adjusted based on temperature. In any event, even if Plaintiffs could point to an embodiment in which only one of the sense or droop outputs was adjusted (which they have not done), that still could not override the express claim language stating that the sense outputs "and" the droop outputs are adjusted. *See SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d

870, 875 (Fed. Cir. 2004) (specification cannot be used to rewrite claims).

Third, Plaintiffs' argument that the specification shows that the sense and droop outputs are adjusted in "combination" (ECF 143 at 20, 21) or "as a pair" (*id.*) does not support Plaintiffs' construction. It is unclear what exactly Plaintiffs mean by this argument but, if anything, their argument confirms that the specification repeatedly describes the adjustment of ***both*** the sense outputs ***and*** the droop outputs, not just one or the other. *See, e.g.*, '944 patent, 9:25-27 ("The calibration control circuit controls the adjustments to the droop amplifier via the droop output 550 ***and*** the sense amplifiers via sense outputs 530."), Abstract, 5:61-65, 6:31-33.

Fourth, Plaintiffs' argument that the patent does not require changing both the sense and droop outputs "concurrently" does not support Plaintiffs' construction. ECF 143 at 22; *see also id.* at 21. Intel does not contend that the droop and sense outputs must be adjusted concurrently. Instead, Intel asserts only that the calibration control circuit must: (1) adjust the droop outputs based on temperature, and (2) adjust the sense outputs based on temperature. ECF 145 at 24-26. Plaintiffs' proposed construction is wrong because it could cover a system in which the sense outputs are ***never*** changed based on temperature; and it could cover a system in which the droop outputs are ***never*** changed based on temperature. Such a construction is inconsistent with the plain language of the claims which unequivocally require the calibration control circuit "to adjust said sense outputs ***and*** said droop outputs."

2. Plaintiffs' Criticism Of Intel's Construction Is Wrong

Plaintiffs' only criticism of Intel's construction is that it allegedly could be read to require that the sense and droop outputs "be adjusted in lockstep." ECF 143 at 22. Plaintiffs mischaracterize Intel's construction. Nothing in Intel's construction requires "lockstep" adjustments to the sense and droop outputs. As discussed above, Intel's proposed construction requires only that the calibration control circuit adjust both the sense and droop outputs based on

temperature. ECF 145 at 24-26. Those adjustments need not be in lockstep.

The claims expressly require the sense ***and*** the droop outputs to be adjusted. This term should be construed as Intel proposes: "the calibration control circuit uses the temperature data to adjust both the sense outputs and the droop outputs."

G. "said calibration control circuit interfaces with said nonvolatile memory to store calibration data"

Claim Term	Intel's Proposed Construction	Plaintiffs' Proposed Construction
"said calibration control circuit interfaces with said nonvolatile memory to store calibration data" (claims 1-36)	"The calibration control circuit writes calibration data into the nonvolatile memory."	Plain meaning. Alternatively: "The calibration control circuit communicates with nonvolatile memory to store calibration data in any memory."

The parties' dispute regarding this term reduces to whether this term refers to calibration data being stored in ***nonvolatile*** memory (as Intel proposes), or whether this term is satisfied by the storage of calibration data "in ***any*** memory" (as Plaintiffs propose).

1. The Term Should Be Construed

Plaintiffs' argument that this term does not require construction (ECF 143 at 23-24) is wrong. Plaintiffs seek to improperly broaden the term to cover the storage of calibration data in merely "***any*** memory," and the parties therefore have a clear dispute regarding the term's scope. The term must be construed. *O2 Micro*, 521 F.3d at 1362.

2. Plaintiffs Are Wrong That The Term Should Be Construed To Cover Storage In "Any Memory"

Plaintiffs make a series of arguments to try to stretch this claim term to cover the storage of calibration data in "any memory," including volatile memory. Each argument lacks merit.

First, Plaintiffs are wrong that the claim language supports their construction. ECF 143 at 23-24. Plaintiffs assert that the disputed term "only states that the calibration control circuit interfaces with nonvolatile memory and ***can store*** calibration data," and that the claim therefore requires only that the calibration control circuit "ha[ve] ***the ability to store*** calibration data"

generally, not in any particular location. *Id.* at 23. But Plaintiffs again mischaracterize the claims. Plaintiffs' argument artificially divides the claim term into two disconnected functions: interfacing with nonvolatile memory and storing calibration data. The claim, however, directly ties those two functions together: "said calibration control circuit ***interfaces with said nonvolatile memory <u>to</u> store calibration data***." '944 patent, claim 1 (10:11-12). Plaintiffs' argument effectively rewrites the claim from "***to*** store" to "***and*** store." But the "to" that Plaintiffs would change to "and" makes clear that the calibration control circuit does not merely store the data in any memory as Plaintiffs assert. Instead, it interfaces with the nonvolatile memory to store the data, *i.e.*, it stores the data ***in that nonvolatile memory***.

Plaintiffs also argue that claim language earlier in the claim—"said nonvolatile memory stores calibration data" (in the first limitation of claim 1)—indicates that calibration data "may already be stored" in nonvolatile memory and that, as a result, the disputed claim term (which comes later) must therefore refer to the calibration control circuit accessing that data from nonvolatile memory and storing it into some other memory. ECF 143 at 24 (citing '944 patent, claim 1 (10:7)). But the claim language Plaintiffs cite simply states that, in the claimed invention, "nonvolatile memory stores calibration data." '944 patent, claim 1 (10:7). The disputed claim term follows that language and explains ***how*** the calibration data gets into nonvolatile memory: the "calibration control circuit interfaces with said nonvolatile memory to store calibration data." *Id.*, 10:11-12. Moreover, other subsequent claim language states that the calibration control circuit calibrates "said calibration data stored in nonvolatile memory," confirming that the calibration data has been stored in nonvolatile memory, not merely some other form of memory. *Id.*, 10:18-20; *see* ECF 145 at 30-31. Plaintiffs cannot overcome the fact that the claims never mention the "any memory" they propose in their construction. The only

memory the claim references is ***nonvolatile*** memory. If the inventors intended to cover merely storing calibration data in any memory, they could have said so. But they did not. *E.g.*, *Triton Tech of Texas, LLC v. Nintendo of Am., Inc.*, 2013 WL 12120524, at *5 n.4 (W.D. Wash. June 4, 2013) (rejecting proposed construction; noting that "if the inventor meant to" claim invention as construction required "he would have said so").

Second, Plaintiffs are wrong that the specification supports their attempt to rewrite the claims. ECF 143 at 24. The specification repeatedly describes the storage of calibration data in ***nonvolatile*** memory; it never describes any embodiment in which calibration data is stored in volatile memory. ECF 145 at 31; *e.g.*, '944 patent, 3:64-67 ("The controller [of the calibration control circuit] then creates data that relates the temperature with the sense outputs and temperature with the droop output [*i.e.*, calibration data] ***and store [sic] the data in nonvolatile memory***."). Indeed, storage of the calibration data in nonvolatile memory is described as an important feature of the claimed invention. *See* ECF 145 at 31-32; ECF 146-2, Hejazi Dep., 125:11-22 (claimed invention requires storage in nonvolatile memory so that "if the circuit is powered off and then powered back on you have the calibrated data already stored"). Plaintiffs note that the specification states that calibration data is "preferably" stored in nonvolatile memory and suggest this means the claims also would allow storage in volatile memory. ECF 143 at 24 (citing '944 patent, 5:21-25). But that preference cannot be used to rewrite the claims. *See SuperGuide Corp.*, 358 F.3d at 875 (specification cannot be used to rewrite claims).

Third, Plaintiffs' arguments about what the specification "inherently" discloses underscore the extent to which they must stretch to attempt to support their construction. ECF 143 at 24. Plaintiffs argue that: (1) the specification discloses components—state machine, processor—that "***inherent[ly]***" include volatile memory; and (2) the reading of calibration data for use by such

components "***inherently*** involves the calibration data in volatile memory." *Id.* That Plaintiffs must resort to such an "inherently" argument merely serves to confirm that the specification does not actually say that calibration data may be stored only in volatile memory. Instead, the specification repeatedly describes storing the calibration data in nonvolatile memory. ECF 145 at 31-33; '944 patent, 5:23-25; ECF 146-2, Hejazi Dep., 125:11-22. Nothing in the claims precludes the calibration control circuit from ***also*** storing the calibration data in volatile memory. But Plaintiffs cannot eliminate the clear requirement that the calibration control circuit must store calibration data in nonvolatile memory.

3. Plaintiffs' Criticism Of Intel's Construction Is Wrong

Plaintiffs' criticisms of Intel's proposed construction miss the mark. ***First***, Plaintiffs' claim differentiation argument is wrong. ECF 143 at 25. Plaintiffs assert that, because dependent claim 19 refers to "writ[ing]" data to nonvolatile memory, claim 1 cannot be interpreted to mean that calibration data is stored in nonvolatile memory without making claim 19 redundant of claim 1. *Id.* But Plaintiffs' argument again mischaracterizes the claims. Plaintiffs selectively quote the claim language. The full claim language makes clear that Intel's construction creates no improper redundancy. Claim 1 describes what the calibration control circuit does: it interfaces with nonvolatile memory to store calibration data. '944 patent, claim 1 (10:11-12) ("said calibration control circuit interfaces with said nonvolatile memory to store calibration data"). Claim 19 then adds the further limitation that a component not mentioned in claim 1—an external controller—can, among other functions, "write to nonvolatile memory." *Id.*, claim 19 (11:6-11). There is therefore no claim differentiation issue under Intel's proposed construction: claim 19 is narrower than claim 1 because it requires the use of an external controller to perform certain functions including storing data in nonvolatile memory. *See Trading Techs.*, 595 F.3d at 1355 (rejecting argument that claim differentiation required broader construction where

dependent claim included other limitations).

Second, Plaintiffs are incorrect that there are embodiments in which calibration data is "read from nonvolatile memory" and then stored in another (volatile) memory (*e.g.*, "memory within the state registers, processor registers and RAM of the calibration control circuit"). ECF 143 at 25. Neither of the two portions of the specification quoted by Plaintiffs indicates that calibration data is read from nonvolatile memory and stored in volatile memory. The first quotation merely refers to referencing calibration data in memory and then using the data to set the outputs; it does not specify that data is read from nonvolatile to volatile memory. *Id.* at 25 (citing '944 patent, 4:29-33 ("The controller then. [*sic*] references the memory for stored calibration data that may be associated with the sampled temperature. Finally the controller sets the sense output and the droop output of the calibration control circuit according to the calibrated data.")). The second quotation simply reaffirms Intel's point—that the calibration data is, in fact, "stored in nonvolatile memory." ECF 143 at 25-26 (citing '944 patent, 5:23-25 ("This calibration data is preferably stored in nonvolatile memory, where it can be reused, modified, and restored throughout the life of the power supply.")).

Third, Plaintiffs are wrong to suggest that Intel's construction "read[s] out the interface language from the claim." ECF 143 at 26. Plaintiffs argue that Intel's construction wrongly "requires that the calibration control circuit actually write calibration data into the nonvolatile memory," whereas (according to Plaintiffs) the claim merely requires the calibration control circuit to interface with nonvolatile memory while other unidentified components may store the calibration data in nonvolatile memory. *Id.* at 26. But the passages Plaintiffs cite do not support this argument. They merely state that an external controller ***also*** may write to the nonvolatile memory. *See* '944 patent, 9:54-58 ("The controller 500 also interfaces with an external

controller that may control the adjustments directly, read the status values of the sample inputs for temperature and load voltage, and to read and write the nonvolatile memory contents."), 7:58-59 ("The external controller may create the output data and write it to the nonvolatile memory."). Neither passage even refers to storing "calibration data" (much less to storing it somewhere other than nonvolatile memory). Moreover, nothing in these passages suggests that Intel's construction eliminates the requirement that the calibration control circuit interface with nonvolatile memory. Instead, Intel's construction necessarily requires the calibration control circuit to interface with the nonvolatile memory so it can write calibration data into that memory.

Plaintiffs should not be permitted to rewrite their claims to cover storing data in "any memory." Accordingly, the term should be construed as Intel proposes.

H. "said calibration control circuit interfaces with said regulator circuit via said sense outputs, said droop outputs, and said load voltage input"

Claim Term	Intel's Proposed Construction	Plaintiffs' Proposed Construction
"said calibration control circuit interfaces with said regulator circuit via said sense outputs, said droop outputs, and said load voltage input" (claims 1-36)	"The calibration control circuit communicates with the regulator circuit by receiving the regulator's output voltage via the load voltage input and by sending adjustments to the regulator via the sense and droop outputs."	Plain meaning. Alternatively: "The calibration control circuit communicates with the regulator circuit by way of the sense outputs, droop outputs, and load voltage input."

The parties' primary dispute regarding this claim phrase is whether it should be construed to help the jury understand the asserted claim language (as Intel proposes).

1. *The Term Should Be Construed*

Plaintiffs contend that this phrase "need not be construed as its plain meaning is clear and uncomplicated." ECF 143 at 27. But Plaintiffs' brief itself shows that the parties have a disagreement about the scope of this phrase: Plaintiffs argue, for example, that Intel's construction is "improperly limiting." *Id.* at 28. It should therefore be construed. *See O2 Micro*, 521 F.3d at 1360. Moreover, construing this claim phrase would assist a lay jury by explaining the claim's technical language in simpler terms. ECF 145 at 34-35; *Embrex, Inc. v. Service*

Eng'g Corp., 216 F.3d 1343, 1347 (Fed. Cir. 2000).

The alternative construction that Plaintiffs propose also should be rejected. Plaintiffs' construction essentially takes the claim phrase and merely replaces "interfaces" with "communicates" and "via" with "by way of." Plaintiffs' brief suggests that Plaintiffs intend the "by way of" language to broaden the scope of the term to cover communication to and from the calibration control circuit through circuitry other than the input and output circuitry recited in the claim. ECF 143 at 27; *see also id.* at 28. But the two examples of communication through allegedly "intervening circuitry" that Plaintiffs cite do not support their argument. As explained above (*see supra* p. 19 n.8), the analog-to-digital converters and digital-to-analog converters in Figure 2 are ***part of the calibration control circuit*** and therefore cannot be considered "intervening circuitry" between the calibration control circuit and regulator circuit. Similarly, the external interface shown in Figure 2 allows the calibration control circuit to interact with an external controller, and that external controller may too interact with the regulator circuit. But that example does not support Plaintiffs' argument because it shows no intervening circuitry ***between the calibration control circuit and the regulator circuit***.

2. Plaintiffs' Criticism Of Intel's Construction Is Wrong

Plaintiffs' only criticism of Intel's construction is that it allegedly requires the calibration control circuit to receive the ***analog*** voltage supplied to the load. ECF 143 at 27-28. But just as they did with the "load voltage input" term discussed above (see *supra* § II(D)), Plaintiffs' mischaracterize Intel's construction. Intel's construction does not require the load voltage input to provide the output voltage (*i.e.*, the voltage supplied to the load) in analog form.

This claim term should be construed as Intel proposes: "the calibration control circuit communicates with the regulator circuit by receiving the regulator's output voltage via the load voltage input and by sending adjustments to the regulator via the sense and droop outputs."

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MARKOWITZ HERBOLD PC

By: *s/ Renée E. Rothauge*

Renée E. Rothauge, OSB #903712
ReneeRothauge@MarkowitzHerbold.com
(503) 295-3085

WILMER CUTLER PICKERING HALE AND DORR LLP
Michael J. Summersgill (*pro hac vice*)
Todd C. Zubler (*pro hac vice*)
Jordan L. Hirsch (*pro hac vice*)
Arthur W. Coviello (*pro hac vice*)
Attorneys for Defendant and Counterclaim Plaintiff Intel Corporation

868120